



## APROPOS 18

Advanced Properties and Processes in Optoelectronic Materials and Systems

5-7 October, 2022 - Conference

2-4 October, 2022 - Masterclass

### PROGRAMME

<b>DAY 1, October 5</b> Center for Physical Sciences and Technology (FTMC) Saulėtekio av. 3, Vilnius, Lithuania Conference hall A101		
8:30-9:00	FTMC	<b>Registration</b>
9:00	FTMC A101	<b>CONFERENCE OPENING</b> <i>Mayor of Vilnius Remigijus Šimašius</i> <i>Vice-Minister of Education, Science and Sport Ramūnas Skaudžius</i> <i>Chair of APROPOS 18 Conference Gintaras Valušis</i>
<b>Section 1: Semiconductor nanostructures and advanced photonics systems</b> <i>Chair: Vidmantas Gulbinas</i>		
9:10	S1-I1-P	<b>Karl Leo</b> (TU Dresden, Germany) – <i>Organic semiconductors for novel optoelectronic devices – Plenary</i>
9:40	S1-I2	<b>Vytautas Getautis</b> (KTU, Lithuania) – <i>Advanced Organic Molecules for New Generation Solar Cells: from Idea to Commercialization – Invited</i>
<b>10:10-10:30 Coffee break</b>		
<b>Special session “SEMICONDUCTOR CHIPS TRENDS AND ISSUES”</b> <i>Chair: Linas Minkevičius</i>		
10:30	S-I1	<b>Robert Lo</b> , Deputy General Director of EOSL/ITRI (Hsinchu, Taiwan) – <i>The Next Generation of Semiconductor: Trends in chip technology and 3D heterogeneous integration – Invited</i>
11:00	S-I2	<b>Jo De Boeck</b> , IMEC (Belgium) – <i>Invited</i>
11:30	S-I3	<b>Ernestas Zdaniauskis</b> , Teltonika (Vilnius, Lithuania) – <i>TELTONIKA towards new industries: from EMS to semiconductor chips – Invited</i>
<b>12:00-13:00 Lunch break</b>		
<b>Section 2: Materials for optoelectronics</b> <i>Chair: Hartmut Roskos</i>		
13:00	S2-I1	<b>Chiko Otani</b> (RIKEN Center for Advanced Photonics, Japan) – <i>Development of 300 GHz walk-through body scanner for security gate inspections – Invited</i>
13:30	S2-I2	<b>Yi-Jen Chiu</b> (National Sun Yat-sen University, Taiwan) – <i>Above 100Gb/s by Wafer-bonding Hybrid Si Photonics integration – Invited</i>
14:00	S2-I3	<b>Alessandro Surrente</b> (Wrocław University of Science and Technology, Poland) – <i>Magnetically brightened dark excitons in two-dimensional metal halide perovskites – Invited</i>
14:30	S2-O1	<b>C. P. V. Nguyen</b> – <i>First comparison of rhodium- and iron-doped InGaAs photoconductive THz emitters for continuous-wave terahertz emission</i>
14:45	S2-O2	<b>A. Apostolakis</b> – <i>Broadband amplification of terahertz electromagnetic radiation from semiconductor superlattices under coherent phonon driving</i>
<b>15:00-15:15 Coffee break</b>		
<b>Section 3: Ultrafast and THz phenomena</b> <i>Chair: Daniel Mittleman</i>		
15:15	S3-I1	<b>Taiichi Otsuji</b> (Tohoku University, Japan) – <i>Invited</i>
15:45	S3-I2	<b>Wojciech Knap</b> (Warsaw, Unipress, Poland) – <i>Towards on-chip plasmonics amplifiers of THz radiation – ERC – advanced project – Invited</i>
<b>Section 4: Quantum optics</b> <i>Chair: Heinz-Wilhelm Hübers</i>		
16:15	S4-I1	<b>Georgy Fedorov</b> (Institute of Photonics, University of Eastern Finland, Finland) – <i>Graphene based devices for terahertz radiation detection and beyond – Invited</i>
16:45	S4-I2	<b>Fedor Jelezko</b> (Ulm University, Germany) – <i>Quantum sensing enabled by spin qubits in diamond – Invited</i>
17:15	S4-I3	<b>Gediminas Juzeliūnas</b> (Vilnius University, Lithuania) – <i>Topology for Electrons in Solids, Photons and Ultracold atoms – Invited</i>
17:45	S4-I4	<b>Stephan Winnerl</b> (Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf) – <i>Nonequilibrium carrier dynamics in Landau quantized graphene and mercury cadmium telluride – Invited</i>
<b>18:15-18:30 Coffee break</b>		
<b>18:15-19:00 POSTER SESSION / Networking</b>		

<b>DAY 2, October 6</b>		
VU Library Scholarly Communication and Information centre (MKIC)		
Saulėtekio av. 5, 10222 Vilnius		
Conference hall A103		
<b>8:30-9:00</b>	<b>MKIC</b>	<b>Registration</b>
<b>Section 5: SPECIAL SESSION – United Lithuanian-Polish workshop “LUBLIN READINGS”</b> <b>dedicated to express solidarity with Ukrainian scientists</b> <b>Chair: Gintaras Valušis</b>		
<b>9:00</b>	<b>MKIC A103</b>	<b>Ambassador Extraordinary and Plenipotentiary of the Republic of Poland in Lithuania</b>
<b>9:10</b>	<b>S5-I1</b>	<b>Rimvydas Petrauskas</b> (Vilnius University, Lithuania) – <i>historical lecture at “Lublin Readings” – Invited</i>
<b>9:40</b>	<b>S5-I2</b>	<b>Tribute to those who died for Ukraine’s freedom.</b> <b>Andrey Kadashchuk</b> (Kiev – Bayreuth (Ukraine-Germany)) – <i>Monitoring the charge-carrier occupied density-of-states in disordered organic semiconductors under non-equilibrium conditions – Invited</i>
<b>10:10-10:30 Coffee break</b> <b>Chair: Andrey Kadashchuk and Agnieszka Siemion</b>		
<b>10:30</b>	<b>S5-I3</b>	<b>Egidijus Auksorius</b> (FTMC, Lithuania) – <i>Imaging of the human retina and cornea in vivo with high-resolution ultrafast optical coherence tomography – Invited</i>
<b>11:00</b>	<b>S5-O1</b>	<b>M. Dub</b> – <i>Low frequency noise as a quality control of novel AlGaIn/GaN devices</i>
<b>11:15</b>	<b>S5-O2</b>	<b>V. Stankevič</b> – <i>Measurement of short pulsed magnetic fields</i>
<b>11:30</b>	<b>S5-O3</b>	<b>D. Pashnev</b> – <i>Optimization of 2D plasmons excitation in grating-gated AlGaIn/GaN high electron mobility transistor structures</i>
<b>11:45</b>	<b>S5-O4</b>	<b>M. Maciaszek</b> – <i>ab initio modeling of the photoionization of NV centers in diamond OR Thermodynamical modeling of carbon related defects in hexagonal boron nitride</i>
<b>12:00</b>	<b>S5-O5</b>	<b>V. Čižas</b> – <i>Dissipative parametric generation in a biased superlattice: the case of small signal gain</i>
<b>12:15</b>	<b>S5-O6</b>	<b>P. Sai</b> – <i>Interplay of THz plasmon modes in AlGaIn/GaN grating-gate structures</i>
<b>12:30-13:30 Lunch break</b> <b>Section 6: THz technologies</b> <b>Chair: Wojciech Knap</b>		
<b>13:30</b>	<b>S6-I1</b>	<b>Heinz-Wilhelm Hübers</b> (German Aerospace Center, Berlin, Germany) – <i>Terahertz technology for remote sensing of the Earth’s atmosphere – Invited</i>
<b>14:00</b>	<b>S6-I2</b>	<b>Hartmut G. Roskos</b> (Goethe-university, Frankfurt/M, Germany) – <i>High-harmonic generation in p-doped Si pumped with intense terahertz pulses – Invited</i>
<b>14:30</b>	<b>S6-O1</b>	<b>I. Grigelionis</b> – <i>Excitation of magnetic polaritons in n-GaAs/GaAs/metal structure in the terahertz range</i>
<b>14:45</b>	<b>S6-O2</b>	<b>K. Kumar</b> – <i>Towards electronically-controlled reconfigurable terahertz beam steering based on phase-change metasurfaces</i>
<b>15:00</b>	<b>S6-O3</b>	<b>R. Balagula</b> – <i>Efficient electrooptic THz beam modulator based on drifting space-charge domains in gallium nitride structures</i>
<b>15:15</b>	<b>S6-O4</b>	<b>D. But</b> – <i>Optimization of self-mixing effect in integrated BiCMOS sources for reflection-type imaging applications</i>
<b>15:30</b>	<b>S6-O5</b>	<b>S.R. Ayyagari</b> – <i>Development of Hybrid phase profile silicon multi-phase zone plate lenses for THz frequencies</i>
<b>15:45-16:00 Coffee break</b> <b>Chair: Chiko Otani</b>		
<b>16:00</b>	<b>S6-I3</b>	<b>Daniel Mittleman</b> (Brown University, USA) – <i>Local and non-local terahertz measurements in the near field – Invited</i>
<b>16:30</b>	<b>S6-I4</b>	<b>Tadao Nagatsuma</b> (Osaka University, Japan) – <i>Wireless telecommunications towards Beyond 5G/6G – Invited</i>
<b>17:00</b>	<b>S6-O6</b>	<b>I. Belio-Apaolaza</b> – <i>Optical-THz-Optical bridge at 5Gbps with a photonically-driven Schottky mixer at the receiver</i>
<b>17:15</b>	<b>S6-O7</b>	<b>A. Bandyopadhyay</b> – <i>100 Gbit/s THz Data Transmission and Beyond using Multicore Fiber Combined with UTC Photodiode Array</i>
<b>17:30</b>	<b>S6-O8</b>	<b>M. Tamošiūnaitė-Survilienė</b> – <i>Outdoor THz communications: channel characteristics and statistical uncertainties</i>
<b>17:45</b>	<b>S6-O9</b>	<b>S. Iwamatsu</b> – <i>Ultra-Broadband THz Transition from CPW to Si Rod Waveguide for Future Tbps On-Chip Communications</i>
<b>18:00</b>	<b>S6-O9</b>	<b>K. Ikamas</b> – <i>Data Transmission with Compact All-Electronic THz Wireless System</i>
<b>18:15</b>	<b>S6-O10</b>	<b>K. Spanidou</b> – <i>Optical heterodyne-based module on silicon platform for sub-THz wireless data transmission</i>
<b>19:30 DINNER GALA (Energy and Technology Museum (Rinktinės str. 2, 09312 Vilnius))</b>		

<b>DAY 3, October 7</b>		
VU Library Scholarly Communication and Information centre (MKIC)		
Saulėtekio av. 5, 10222 Vilnius		
Conference hall A103		
<b>8:30-9:00</b>	<b>MKIC A103</b>	<b>Registration</b>
<b><u>Section 7: Organic materials for optoelectronics</u></b>		
<i>Chair: Irmantas Kašalynas</i>		
<b>9:00</b>	<b>S7-I1</b>	<b>Vidmantas Gulbinas</b> (FTMC, Lithuania) – <i>Charge carrier motion in perovskite films. Role of barriers – Invited</i>
<b>9:30</b>	<b>S7-I2</b>	<b>Tomas Serevičius</b> (Vilnius University, Lithuania) – <i>Towards thermally activated delayed fluorescence compounds with minimized solid-state conformational disorder – Invited</i>
<b>10:00</b>	<b>S7-O1</b>	<b>A. Klein Schuster</b> – <i>Enhanced Mie Scattering on Spoof Plasmonic Surfaces of Terahertz Biosensors</i>
<b>10:15-10:30 Coffee break</b>		
<b><u>Section 8: Nano and Biophotonics</u></b>		
<i>Chair: Georgy Fedorov</i>		
<b>10:30</b>	<b>S8-I1</b>	<b>Valery Zwiller</b> (KTH, Sweden) – <i>Generation, manipulation and detection of light at the single photon level – Invited</i>
<b>11:00</b>	<b>S8-I2</b>	<b>Janis Spigulis</b> (University of Latvia) – <i>Skin-remitted light as a tool for health monitoring – Invited</i>
<b>11:30</b>	<b>S8-O1</b>	<b>L. Naimovičius</b> – <i>Novel diketopyrrolopyrrole-based emitters for NIR-to-visible photon upconversion</i>
<b>11:45</b>	<b>S8-O2</b>	<b>J. Jovaišaitė</b> – <i>Diboranthracene and polymer-based systems for room temperature organic afterglow</i>
<b>12:00</b>	<b>S8-O3</b>	<b>V. Astachov</b> – <i>Controllable growth of two-dimensional palladium sulfide films</i>
<b>12:15</b>	<b>S8-O4</b>	<b>S. Nargelas</b> – <i>Photoluminescence and transient optical absorption in heavily doped lead tungstate</i>
<b>12:30-13:30 Lunch break</b>		
<b><u>Section 9: Semiconductor nanostructures and advanced photonics systems</u></b>		
<i>Chair: Renata Butkutė</i>		
<b>13:30</b>	<b>S9-O1</b>	<b>R. Ivaškevičiūtė-Povilauskienė</b> – <i>Terahertz imaging using diffractive Airy lens</i>
<b>13:45</b>	<b>S9-O2</b>	<b>S. Keraitytė</b> – <i>Growth Optimization and Characterization of MQWs based on InGaAs and GaAsBi for VECSELS and NIR sources</i>
<b>14:00</b>	<b>S9-O3</b>	<b>E. Dudutienė</b> – <i>Effect of substrate temperatures on luminescent properties of GaAsBi/GaAs multi-quantum-wells</i>
<b>14:15</b>	<b>S9-O4</b>	<b>M. Karaliūnas</b> – <i>Experimental Investigation of GaAs(Bi)/AlGaAs Grown Parabolic Quantum Wells in Terahertz Frequency Range</i>
<b>14:30</b>	<b>S9-O5</b>	<b>S. Stanionytė</b> – <i>Structural analysis of thin bismuth layers grown on silicon (111) substrates</i>
<b>14:45</b>	<b>S9-O6</b>	<b>T. Troha</b> – <i>Ultrafast long-distance electron-hole plasma expansion in GaAs mediated by stimulated emission of photons</i>
<b>15:15-15:30 Coffee break</b>		
<b>Section 10:</b>		
<i>Chair: Renata Butkutė and Gintaras Valušis</i>		
<b>15:30</b>	<b>MKIC</b>	<b>SPECIAL SESSION – 3 min award presenters session</b>
<b>16:00</b>	<b>A103</b>	<b>CLOSING REMARKS</b>
<b>16:10</b>	<b>FTMC</b>	Excursion to the laboratories and Clean Room Facilities // Meeting of Scientific conference board

**DAY 1, October 5**

Center for Physical Sciences and Technology (FTMC)

Saulėtekio av. 3, Vilnius, Lithuania

Main hall near A101

**18:15-19:00 POSTER SESSION****Section 1: Semiconductor nanostructures and advanced photonics systems****S1-P1** – Arnas Pukinskas – Bi-Quantum Dots Formation in-situ in MBE Reactor**S1-P2** – Justinas Jorudas – Comparison of InAlGa<sub>N</sub> and AlGa<sub>N</sub> HEMT structures**S1-P3** – Monika Jokubauskaitė – Influence of the design of parabolic AlGaAs barriers on the optical properties of GaAsBi quantum wells**S1-P4** – Algimantas Lukša – Intentional modification of nanocrystalline graphene coatings by thermal annealing**S1-P5** – Martynas Skapas – Transmission electron microscopy of Hybrid graphene-lanthanum perovskite structures**S1-P6** – Ezgi Abacioglu – Structural, optical, and mechanical properties of silicon nitride films deposited by inductively coupled plasma enhanced chemical vapor deposition**S1-P7** – Linus Ardaravičius – High-field electron transport measurements in (Be,Zn)MgO/ZnO heterostructures**Section 2: Materials for optoelectronics. Quantum optics****S2-P1** – Dominykas Dumbbrė – Experimental Investigation of GaAs(Bi)/AlGaAs Grown Parabolic Quantum Wells in Terahertz Frequency Range**S2-P2** – Darius Urbonis – Double Fano resonance in broken symmetry split-ring resonator array metasurface**S2-P3** – Justina Žemgulytė – Compact rectennas for energy harvesting using SSAIL technique**S2-P4** – Jerzy Lusakowski – Optically detected cyclotron resonance in CdTe-based quantum wells**S2-P5** – Karolis Redeckas – Quantum well infrared photodetector operating at room temperature**S2-P6** – Žygimantas Vosylius – Radiometric imaging and pulsed X-ray-based studies of light collection from scintillating crystals**S2-P7** – Jose Javier Fernandez-Pacheto Cuesta – Study of thermo-refractive noise in solid-state dual frequency micro-lasers**S2-P8** – Vytautas Janonis – Optimization of Coherent Thermal Emission from Circular Shape n-GaN Surface Relief Gratings**Section 3: Ultrafast and THz phenomena. THz technologies****S3-P1** – Dominykas Sanda – Application of terahertz time-domain spectroscopy in the study of air components and vapors of organic compounds**S3-P2** – Alexander Chernyadiev – Investigation of sensitivity limits of a near-field THz sensor based on a Si CMOS technology**S3-P3** – Himanshu Gohil – Development of an integrated Schottky based heterodyne THz receiver at 300 GHz using power combining approach.**S3-P4** – Javier Martinez Gil – 270-320 GHz Low Barrier Schottky Diode Mixer**S3-P5** – Mateusz Kaluza – 3D printed THz MIMO diffractive structures**S3-P6** – Mateusz Surma – THz achromatic lens from 3D printing materials**S3-P7** – Ashish Kumar – Cost-effective high pass filter for dielectric rod waveguides**S3-P8** – Abdu Subahahan Mohammed – Low Loss Topological Silicon Valley Photonic Crystal waveguides in Terahertz regime**S3-P9** – Yilmaz Ucar – Cascaded wideband RoF links with LWA for enabling mobile 5G base stations**S3-P10** – Jonas Tebart – Exploiting 3D metal printing for additive manufacturing of waveguide and antenna structures for THz-applications**S3-P11** – Fasil Bashir Wani – Metamaterial based Antenna integrated UTC-PD array for THz communications in 270-330 GHz band**Section 4: Organic materials for optoelectronics. Nano and Biophotonics****S4-P1** – Muhammad Mujahid – Triple cation perovskite/silicon tandem solar cell**S4-P2** – Oleg Kiprijanovic – Strong inverse piezoelectric response in graphene - dielectric structures induced by nanosecond electric pulse**S4-P3** – Ihor Zharchenko – Low and high photon energy induced photoresponse in single junction solar cells**S4-P4** – Yaraslau Padrez – Collagen orientation index determination in wide-field SHG microscopic images of lung tissue**S4-P5** – Šarūnas Mickus – Investigation of surface modification of polycarbonate by picosecond Nd:YVO<sub>4</sub> laser pulses for selective chemical copper deposition**S4-P6** – Karolis Adomavičius – In vivo imaging of human retina with Fourier-Domain Full-Field Optical Coherence Tomography and a Multimode Fiber for Coherence Noise Reduction**S4-P7** – Faustino Wahaia – Characterization of Metal-Organic Frameworks (MOFs) Using THz Techniques